

## Various Stroke and Symptoms and Causes

ShinJung Park  
Daegu Dongho high School, Korea G12

### [Abstract]

Stroke is one of the most common leading causes of death. In America, it is the 5<sup>th</sup> leading cause of death with one person dying every 4 minutes. In Korea, it is also one of the leading cause of deaths especially for people working in their 50s or older. It is important to understand the cause and the prevention methods of stroke.

**[Keyword]** Stroke, ischemic stroke, hemorrhagic stroke, transient ischemic attack, symptoms

### [Introduction]

Stroke occurs when the brain loses its blood supply and stops working. It is also known as the brain attack or the cerebrovascular accident.

The National Stroke Association defines stroke as the following. 'A stroke is a "brain attack". It can happen to anyone at any time. It occurs when blood flow to an area of brain is cut off. When this happens, brain cells are deprived of oxygen and begin to die. When brain cells die during a stroke, abilities controlled by that area of the brain such as memory and muscle control are lost.'



FACT

**FACT:** Up to 80 percent of strokes are preventable.

**FACT:** At any sign of stroke call 9-1-1- immediately. Treatment may be available.

**FACT:** Stroke can happen to anyone at any time.

**FACT:** Stroke is a "brain attack".

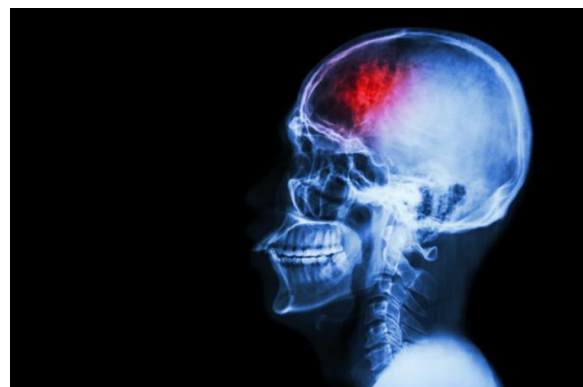
**FACT:** Stroke recovery is a lifelong process.

**FACT:** There are nearly 7 million stroke survivors in the U.S. Stroke is the 5<sup>th</sup> leading cause of death in the U.S.

**FACT:** Family history of stroke increases your chance for stroke.

**FACT:** Temporary stroke symptoms are called transient ischemic attacks (TIA). They are warning signs prior to actual stroke and need to be taken seriously.

**[Figure 1]** Useful facts about stroke



**[Figure2]** Image of where the stroke occurs in the brain.

As for stroke, there are three types which are ischemic stroke, hemorrhagic stroke, and transient ischemic attacks.

### [Ischemic Stroke]

According to National Stroke Association, ischemic stroke occurs when a blood vessel carrying blood to the brain is blocked by a blood clot. This causes blood not to reach the brain. High blood pressure is the most important risk factor for this type of stroke. Ischemic strokes account for about 87% of all strokes. There are

two ways for ischemic stroke to occur which are embolic stroke and thrombotic stroke.

National Stroke Association defines both embolic stroke and thrombotic stroke as follows:

In an embolic stroke, a blood clot or plaque fragment forms somewhere in the body (usually the heart) and travels to the brain. Once in the brain, the clot travels to a blood vessel small enough to block its passage. The clot lodges there, blocking the blood vessel and causing a stroke. About 15% of embolic strokes occur in people with atrial fibrillation (Afib). The medical word for this type of blood clot is embolus.

A thrombotic stroke is caused by a blood clot that forms inside one of the arteries supplying blood to the brain. This type of stroke is usually seen in people with high cholesterol levels and atherosclerosis. The medical word for a clot that forms on a blood-vessel deposit is thrombus.

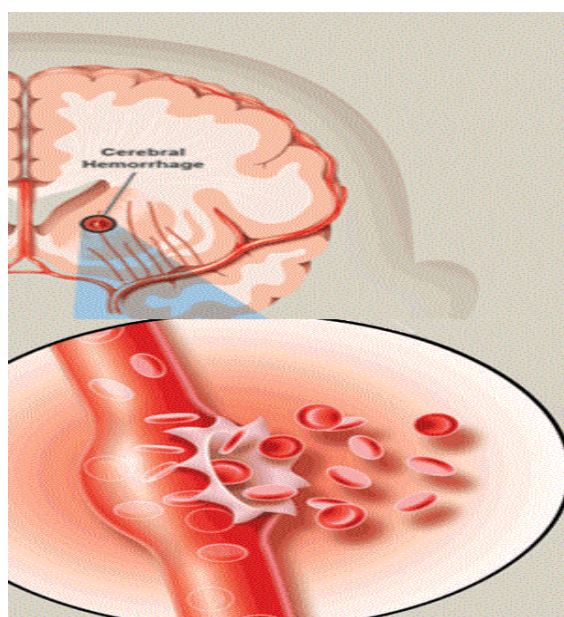
### [Hemorrhagic Stroke]

Hemorrhagic strokes are less common. Hemorrhagic stroke takes up only 15% of all strokes but it is responsible for 40% of stroke deaths. A hemorrhagic stroke is defined to occur when 'either a brain aneurysm bursts or a weakened blood vessel leak. Blood spills into or around the brain and creates swelling and pressure, damaging cells and tissue in the brain. There are two types of hemorrhagic stroke called intracerebral and subarachnoid.'

According to National Stroke Association, intracerebral hemorrhage is defined as the most common hemorrhagic stroke happens when a blood vessel inside the brain bursts and leaks blood into surrounding brain tissue. The bleeding causes brain cells to die and the affected part of the brain stops working correctly. High blood pressure and aging blood vessels are the most common causes of this type of stroke.

Sometimes intracerebral hemorrhagic stroke can be caused by an arteriovenous malformation (AVM). AVM is a genetic condition of abnormal connection between arteries and veins and most often occurs in the brain or spine. If AVM occurs in the brain, vessels can break and bleed into the brain. The cause of AVM is unclear but once diagnosed it can be treated successfully.

According to National Stroke Association, subarachnoid hemorrhage involves bleeding in the area between the brain and the tissue covering the brain, known as the subarachnoid space. This type of stroke is most often caused by a burst aneurysm.

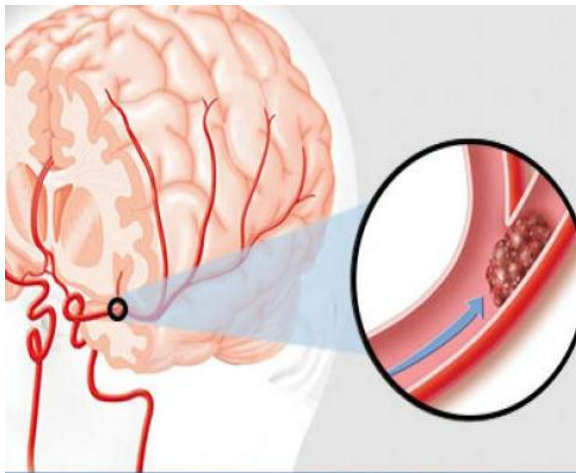


[Figure3] Image of Hemorrhagic stroke

### [Transient Ischemic Attack]

According to National Stroke Association, TIA occurs when blood flow to part of the brain stops for a short period of time. These symptoms appear and last less than 24 hours before disappearing. While TIAs generally do not cause permanent brain damage, they are a

serious warning sign that a stroke may happen in the future and should not be ignored.



[Figure4] Image of Transient Ischemic

### [Symptoms of stroke]

According to the Mayo Clinic, below are the 5 stroke symptoms.

- 1. Trouble with speaking and understanding: You may experience confusion. You may slur your words or have difficulty understanding speech.
- 2. Paralysis or numbness of the face, arm or leg: You may develop sudden numbness, weakness or paralysis in your face, arm or leg, especially on one side of your body. Try to raise both your arms over your head at the same time. If one arm begins to fall, you may be having a stroke. Similarly, one side of your mouth may droop when you try to smile.
- 3. Trouble with seeing in one or both eyes: You may suddenly have blurred or blackened vision in one or both eyes, and you may see double.

4. Headache: A sudden, severe headache, which may be accompanied by vomiting, dizziness or altered consciousness, may indicate you're having a stroke.

5. Trouble with walking: You may stumble or experience sudden dizziness, loss of balance or loss of coordination.

### [Risk factors of stroke]

According to the Mayo Clinic, below are the lists of stroke risk factors.

1. **Lifestyle risk factors:** Being overweight or obese, physical inactivity, heavy or binge drinking, and use of illicit drugs such as cocaine and methamphetamines
- **Medical risk factors:** High blood pressure — the risk of stroke begins to increase at blood pressure readings higher than 120/80 millimeters of mercury (mm Hg). Your doctor will help you decide on a target blood pressure based on your age, whether you have diabetes and other factors. Cigarette smoking or exposure to secondhand smoke. High cholesterol and diabetes. Obstructive sleep apnea — a sleep disorder in which the oxygen level intermittently drops during the night. Cardiovascular disease, including heart failure, heart defects, heart infection or abnormal heart rhythm.
- **Other factors associated with a higher risk of stroke include:** Personal or

family history of stroke, heart attack or transient ischemic attack. Being age 55 or older. Race — African-Americans have a higher risk of stroke than do people of other races. Gender — Men have a higher risk of stroke than women. Women are usually older when they have strokes, and they're more likely to die of strokes than are men. Also, they may have some risk from some birth control pills or hormone therapies that include estrogen, as well as from pregnancy and childbirth.

### [Conclusion]

As stroke can be one of the common causes of death, it is important to watch out for it. Eating habits and other life style behaviors can lead to stroke and therefore, it is important to be aware of the life style habits and healthy diet. It is always important to keep an eye on diseases that can be prevented. To all diseases, preventing is the key factor and then follows the curing procedure.

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## Stroke – there's treatment if you act FAST.



[Figure5] Steps to recovering from stroke

**[Reference]**

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